

## CLAIMS

What is claimed is:

- 1 1. A circuit for applying a load to first and second differential signals of a  
2 differential pair of signals, comprising:
  - 3 a diode quad having first through fourth nodes;
  - 4 a first current source coupled to the first node; and
  - 5 a second current source coupled to the second node;
  - 6 wherein the third and fourth nodes are adapted respectively to receive the first and  
7 second differential signals of the differential pair of signals.
- 1 2. A circuit as recited in claim 1, wherein at least one of the first and second current  
2 sources is programmable.
- 1 3. A circuit as recited in claim 1, wherein the first and second current sources are  
2 independently programmable.
- 1 4. A circuit as recited in claim 1, wherein one programming value establishes the  
2 current of both the first current source and the second current source.
- 1 5. A circuit as recited in claim 1, wherein the diode quad comprises four Schottky  
2 diodes.
- 1 6. A circuit as recited in claim 1, wherein the diode quad comprises four elements,  
2 each element comprising one or more diodes connected in series.
- 1 7. A circuit as recited in claim 1, wherein the diode quad comprises at least four  
2 semiconductor devices each having diode characteristics.

1       8.     A circuit as recited in claim 1, wherein the first and second current sources are  
2     coupled to respective power supplies referenced to a common DC voltage.

1       9.     A circuit as recited in claim 8, wherein the DC voltage is ground.

1       10.    A pin electronics circuit for use in an automatic test system, comprising:  
2              a differential load having first and second terminals that are connectable to nodes  
3     of a unit under test, the differential load including—  
4              a diode quad having a first node coupled to a first current source,  
5              a second node coupled to a second current source;  
6              a third node coupled to the first terminal of the differential load, and  
7              a fourth node coupled to the second terminal of the differential load.

1       11.    A pin electronics circuit as recited in claim 10, wherein the diode quad comprises  
2     four Schottky diodes.

1       12.    A pin electronics circuit as recited in claim 10, wherein the diode quad comprises  
2     four elements, each element comprising one or more diodes connected in series.

1       13.    A pin electronics circuit as recited in claim 10, wherein the diode quad comprises  
2     at least four semiconductor devices each having diode characteristics.

1       14.    A circuit as recited in claim 10, wherein the first and second current sources are  
2     coupled to respective power supplies referenced to a common DC voltage.

1       15.    A method of applying a load for testing a unit under test in an automatic test  
2     system, comprising:  
3              receiving a differential pair of signals, nominally SIG and SIG\*, from the unit  
4     under test;

5 sinking a first current from the one of SIG and SIG\* having the more positive  
6 voltage; and

7 sourcing a second current to the one of SIG and SIG\* having the more negative  
8 voltage;

1 16. A method as recited in claim 15, further comprising:

2 measuring a voltage difference between SIG and SIG\*; and

3 verifying that the measured voltage substantially matches an expected voltage  
4 difference between SIG and SIG\*.

1 17. A method as recited in claim 16, further comprising:

2 indicating a passing result responsive to the measured voltage being within a  
3 predetermined tolerance range of the expected voltage difference; and

4 indicating a failing result responsive to the measured voltage being outside the  
5 predetermined tolerance range of the expected voltage.

1 18. A programmable active load for differential signals, comprising:

2 a first terminal for receiving a first voltage signal, nominally SIG, of a differential  
3 signal pair;

4 a second terminal for receiving a second voltage signal, nominally SIG\*, of the  
5 differential signal pair; and

6 a current producing circuit, coupled to the first and second terminals, for  
7 producing a current between the first and second terminals, said current having a  
8 programmable value and a reversible direction, said direction being one direction when  
9 SIG is greater than SIG\* and the opposite direction when SIG is less than SIG\*.

1 19. A programmable active load as recited in claim 18, wherein the current producing  
2 circuit comprises:

3 a current switching circuit having first, second, third, and fourth nodes;

4 a first current source coupled to the first node of the current switching circuit; and

5           a second current source coupled to the second node of the current switching  
6       circuit,

7           wherein the third and fourth nodes of the current switching circuit are respectively  
8       coupled to the first and second terminals.

1       20.   A programmable active load as recited in claim 19, wherein the current switching  
2       circuit comprises a diode quad.